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## Clutch sizes of Seychelles' endemic land birds

by J. Watson

Received 1 March 1979

This note combines recent published information on clutch sizes of Seychelles' endemic land birds with substantial new data, correcting erroneous statements that have occurred in the literature for several species, especially the Kestrel *Falco araea*, Magpie Robin *Copsychus sebellarum* and Paradise Flycatcher *Terpsiphone corvina*, while for several others little, if anything, has been published. New information presented here has been collected during 3 years field research (1975-78) on a number of Seychelles' land birds. Table 1 summarises the information presented below for each of the 11 endemic species.

FALCO ARAEA Loustau-Lalanne (1962) states that the Seychelles Kestrel lays a C/2 and Penny (1974) mentions C/1 or C/2. However, in 1975, 24 complete clutches were observed, 17 of 3 eggs and 7 of 2 eggs; a similar pattern was observed in 1976 but in 1977 there were more clutches of 2 than 3 (Watson in prep.).

ALECTROENAS PULCHERRIMA Penny (1974) states that the clutch of the Blue Pigeon can be either one or 2, though he gives no authority for this statement. Vesey-Fitzgerald (1940) described a nest with one egg and this appears to be the only published record. During the 3 years 1975-77, 9 nests were located, 5 containing one egg and the remainder each held a single chick (pers. obs.). C/1, therefore, seems to be usual for this species.

OTUS INSULARIS The Scops Owl is the least known of all Seychelles' endemic birds and remains the only species whose nest has yet to be found. There is no published information on breeding but, during 1975-77 on Mahé, 3 different pairs of adults were observed with recently fledged young;

in each case only one young bird was involved. C. J. Feare (pers. comm.), in 1978, observed a group of 3 birds, 2 adults and one (presumed) youngster. For this species, it therefore seems likely that the clutch is small, perhaps only a single egg.

**COLLOCALIA (FRANCICA) ELAPHRA** The colonial nesting site of the Cave Swiftlet was first discovered as recently as 1970 (Procter 1972). Four nests in the original description contained one egg. Between July 1977 and 1978 this colony on La Digue was visited at monthly intervals; 43 nests with eggs were observed and 42 of these held C/1 (pers. obs.). The exceptional nest contained C/2 but there was a distinct possibility that two females had laid in the same nest; when visited one month later the nest held one chick.

TABLE I  
Clutch sizes of Seychelles land birds

Species	Clutch Size	Comments
<i>Falco araea</i>	2 or 3*	Numbers of C/2 and C/3 vary from year to year
<i>Alectroenas pulcherrima</i>	1*	More data needed to confirm absence of 2-egg clutches
<i>Otus insularis</i>	(1)**	Based only on numbers of fledged young
<i>Collocalia (francica) elaphra</i>	1	One clutch of 2 is attributed to 2 different females
<i>Hypsipetes crassirostris</i>	(1 or 2)*	Data from a nest and fledged young are conflicting
<i>Copsychus sechellarum</i>	1*	May occasionally lay C/2
<i>Bebrornis sechellensis</i>	1 or 2	C/2 is much less frequent
<i>Terpsiphone corvina</i>	1*	Invariably, at least in recent years
<i>Nectarinia dussumieri</i>	1	Invariably
<i>Zosterops modesta</i>	(2)**	Based only on one nest and 2 fledged broods
<i>Foudia sechellarum</i>	1 or 2*	C/1 occurs less frequently

\*Clutch size given here differs from previously published information, mostly in Penny (1974)

\*\*There has been no previously published figure for clutch size in these species

( ) Bracketed figures indicate that more data are needed on these species

**HYPSSIPETES CRASSIROSTRIS** A nest of this bulbul, mentioned by Vesey-Fitzgerald (1940), contained 2 eggs. This is the only documented clutch. Greig-Smith (in press, a) mentions a sample of immature birds seen in association with adults; 92 instances were of single young birds, 7 were of groups of 2 and one was of a group of 3. It seems possible that C/1 may be more usual than C/2, though clearly more data are needed.

**COPSYCHUS SEHELLARUM** According to Vesey-Fitzgerald (1940), the eggs are "said to be two in number", but evidently he did not locate a clutch himself. Loustau-Lalanne (1962) also gives C/2, but his evidence was based on only one nest. Penny (1974), without adding any new data, states simply that "the clutch is usually two". However, during 12 months research on Fregate (July 1977-78), 12 nests were found and all contained one egg; a

further 8 were first visited when they had young, in each case a single chick (Watson 1978). It seems therefore that C/1 is normal, although it is possible that a situation exists comparable to the Brush Warbler *Bebrornis sechellensis* (see below).

**BEBRORNIS SEHELLENSIS** The Brush Warbler has been studied intensively by Diamond (in prep.) who has found C/1 to be usual, but that occasionally most pairs in the population will, simultaneously, lay C/2. It is probable that this reflects exceptional food availability. Gaymer *et al.* (1969) make no mention of clutch size in this species but Penny (1974) agrees that one egg is usual though 2 sometimes occur.

**TERPSIPHONE CORVINA** Gaymer *et al.* (1969) give a figure of "one or 2 eggs, possibly sometimes 3". Penny (1974) is more conservative, stating that the clutch is "one or occasionally 2". However Fraser (1972) gives details of 4 nests, all with one egg and A. Niol (pers. comm.) has never, in 8 years spent studying this species on La Digue, recorded a clutch other than one. J. W. and A. Niol documented the complete breeding history of 65 nests on La Digue 1977-78 and all held C/1 (Watson & Niol in prep.).

**NECTARINIA DUSSUMIERI** The nest of this sunbird, containing one egg, was the first nest to be described from these islands (Newton 1867). Williams (1953) refers to "a number of nests" all of which held a single nestling, concluding that the full clutch was one. Gaymer *et al.* (1969) and Penny (1974) add no new information but Greig-Smith (in prep.) recorded C/1 in all the nests he observed. In 1977-78 on Fregate, 5 nests were examined during incubation and all contained one egg (pers. obs.).

**ZOSTEROPS MODESTA** Gaymer *et al.* (1969) stated that nothing was then known of the breeding of the Grey White-eye and Penny (1974) stressed again that its nest had not been seen. Feare (1975) did locate a nest in 1973, though no eggs were laid on that occasion. It was not until October 1976 that the eggs were first seen, the completed clutch being 2 (Greig-Smith in press b). This and the following observations tentatively suggest that C/2 may be usual for this species. A fledged brood of 2 was observed in the same area as the above nest in March 1976 and, following the failure of the October attempt, a successful nest in November 1976 again gave rise to 2 fledglings (pers. obs.).

**FOUDIA SEHELLARUM** For this fody Crook (1961) gives 66 clutches, 15 with one egg and 51 with 2. Penny (1974) however, without giving an authority, says that "the clutch is 2 or 3". Data from Crook's (1961) intensive study are likely to be more reliable.

Clearly, to provide a more complete picture, information is still needed for a number of these species, particularly *H. crassirostris*, *O. insularis* and *Z. modesta*. There will be no great difficulty in obtaining data for *H. crassirostris*, which occurs abundantly on 4 of the islands. However, for the other 2 species, attempts to learn more about their breeding biology will always be hampered by their rarity and restricted ranges; both have very small populations confined to high altitude forest on Mahé.

*Acknowledgements:* I am indebted to Dr. C. J. Feare, Dr. W. R. P. Bourne and B. J. Trowbridge for constructive comments on an earlier draft. Work in Seychelles was supervised by Professor G. M. Dunnet and supported initially by a Natural Environment Research Council Studentship and latterly by the World Wildlife Fund. P. W. Greig-Smith kindly sent me pre-publication drafts of his papers on the sunbird, bulbul and white-eye.

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## A new subspecies of the Elepaio *Chasiempis sandwichensis*, from the Island of Hawaii

by H. Douglas Pratt

Received 19 March 1979

The Elepaio *Chasiempis sandwichensis*, a monarchine flycatcher endemic to the Hawaiian Islands, exhibits a wide range of plumage variation. Early naturalists designated as many as 5 species (Stejneger 1887), but soon the fact that some of these represented females or immatures became apparent. Wilson & Evans (1890-99), Rothschild (1893-1900), Henshaw (1902), Perkins (1903), and MacCaughy (1919) recognized 3 species: *C. sclateri* of Kauai, *C. gayi* of Oahu and *C. sandwichensis* of Hawaii. Bryan & Greenway (1944) and most subsequent authors considered these forms conspecific. The Kauai and Oahu Elepaios exhibit little variation, but those from Hawaii are highly variable. The extent of this intra-island variation is apparent from the figures presented by Wilson & Evans (1890-99) and Rothschild (1893-1900).

Henshaw (1902) was the first to examine intra-island variation in *Chasiempis*. He concluded that 2 subspecies could be defined on Hawaii, the nominate